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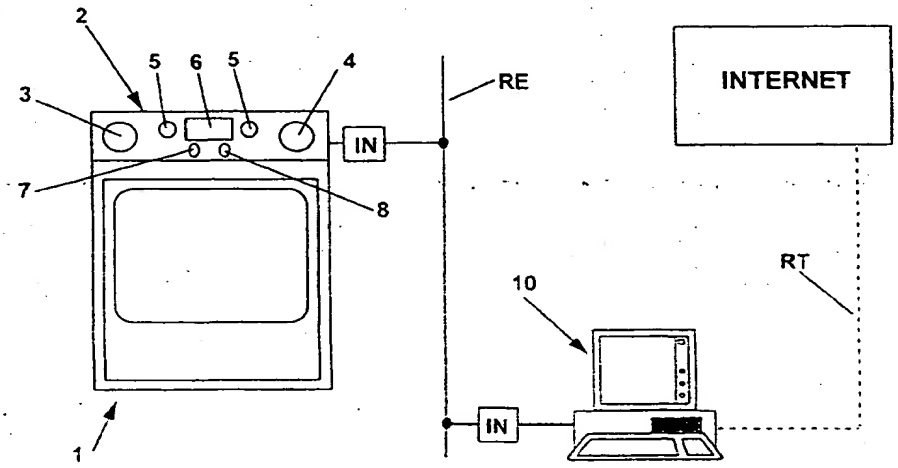

(57) Abstract

A system is described for programming a household appliance (1) having an electronic control, of the type being apt to execute a plurality of control programs. The household appliance (1) has conventional functions, i.e. it is apt to perform basic or standard programs, and has the peculiar feature of being already prearranged for receiving and retaining additional operating programs, coming from outside, according to the user's specific requirements; such new programs are designed and stored in the control system of the household appliance (1) through an external electronic device (10), such as a Personal Computer programmed accordingly. To that purpose, the control system of the household appliance (1) comprises a duly prearranged microcontroller, associated with suitable memory means and means (IN) for the interfacing with said external electronic device (10); a protected part, i.e. non–modifiable, of the memory means contains the information required for executing the basic programs, whereas a free modifiable part of the memory means is assigned for the storage of the new additional programs.

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SYSTEM FOR PROGRAMMING A HOUSEHOLD APPLIANCE HAVING AN ELECTRONIC CONTROL

DESCRIPTION

The present invention relates to a system for programming a household appliance having an electronic control, of the type being able to execute a plurality of programs.

As known, a program consists of a set of instructions duly encoded for controlling the execution of operating cycles, which are meant as a group of operations for handling the items submitted to the action of the household appliance; each operating cycle is individually split in handling steps of its own, which are more or less complex, each one of them featured by specific parameters, which are substantially related to times and modes of actuation of specific internal devices of the household appliance (think for instance, for the case of a laundry wash machine, to solenoid valves, motors, heaters, pumps, fans, detergent dispensers, etc.); in some cases, one same program is apt for controlling execution of several sequential operating cycles (think for instance, always in the case of a laundry washing machine, to a wash cycle followed by a drying cycle).

From the above, it appears clear that quite different handling cycles and consequently various programs corresponds to different values of the parameters mentioned above.

As known, household appliances usually provide a certain number of operating programs, which can be selected by the user according to his/her own requirements.

In general, such programs have a substantially rigid structure, which mainly depends upon the experience and capacity acquired in time by the appliance manufacturer, and a minimum degree of discretional power is left to the user of the appliance in modifying such a structure.

Let us think, for instance, to washing machines which usually have a certain number of standard programs, where only few modifications with the aid of proper control means, such as selectors, push-buttons, etc., can be made by the user, such as setting the washing temperature: the same applies for setting the cooking temperature in household cooking

ovens.

However, in daily practice, it may happen that such limited capabilities of modifying an operating program of the household appliance does not comply with the user's requirements; moreover, the user has no way to permanently store the various modifications he is frequently making manually to a certain program, so that each time he is forced to make a complete resetting.

Household cooking ovens represent a characteristic example of the rigidity of the basic or standard programs of most household appliances presently available.

According to the known technique, in fact, in the instance of household cooking ovens neither the simple programming of different temperature profiles within one operating cycle, nor the control of the activation and/or deactivation at preset times of heat sources or ventilation devices or their alternation and/or modification during the program execution are allowed.

As a result, in the instance of complex cooking processes, a household cooking oven presumes the user's presence and his personal manual activity, right in view of modifying the configuration of the heat sources or the temperature profiles in the time: the user has indeed the opportunity of making such modifications manually, but this obviously requires a high engagement and is complicated.

Let us think, for instance, of baking a roast-beef in an oven, which requires in general an initial phase with a considerable heat supply followed then by a low fire phase.

The preparation of such a simple dish in a conventional oven does necessarily require the user's presence, for manually changing, at the right time, the temperature and/or the configuration of the heating elements, after the oven has performed the above initial phase.

Obviously, similar problems also arise in household appliances other than cooking ovens, such as laundry washing machines, dishwashers, refrigerators and in general for any household appliance where a user may wish to obtain specific *ad-hoc* programs, to suit his own requirements.

In an attempt of facilitating from a practical viewpoint the programming of complex

functions. household appliances have been proposed. having an electronic control and proper dialog means, such as displays and keyboards. with the purpose of reducing the user's difficulties through a most interactive programming.

However, such solutions do not allow for generating real new permanent operating programs, being designed by the user; moreover, said dialog means, which are rather expensive, require the use of electric/electronic devices capable of withstanding the difficult working conditions of the household appliance. leading to a consequent increase in the cost of the latter.

Other solutions are also known, which provide for the use, on-board the household appliance, of sophisticated systems for a further programming, based on bar-code readers or magnetic cards; such systems, too, if allows for easing the user's life on one hand, will increase the final cost of the appliance to a prohibitive extent on the other hand; moreover, it is not quite sure that the programs configured as bar codes or magnetic cards will fully comply with the user's specific requirements.

As it can be noticed, therefore, the household appliances of the above type, though being characterized by a high sophistication level. have an extremely high cost, which tends to limit their diffusion and make them less "user friendly".

Appliances for beverage preparation are also known in an industrial environment, whose electronic control system can be interfaced to an external device. such as a computer; in this instance, the appliance provides a limited number of standard operative programs having a well defined structure, while the external device is used. when installing the appliance itself, to set some characteristic parameters of said predefined standard programs according to the user's instructions and/or type of beverage to be prepared; the parameters are then permanently stored in the memory means of the appliance control system, until a new setting of such parameters is necessary.

The above system. which is provided for the initial setup or the periodical setting of the appliance. has the drawback of not allowing a real creation of new operative programs, other than the standard ones, to suit the user's necessities.

Apart form the fact that an industrial appliance for beverage preparation represents a more complex and expensive machine compared to a common household appliance, a solution of the above kind, when referred to a household appliance, would not solve the above problems, save allowing for a durable saving of the parameters most frequently used with reference to the basic programs alone.

Another drawback of the above solution is the limited number of available programs, without any capability of adding new programs to the existing ones.

It is the object of the present invention to indicate a solution for the above problems, without increasing the cost of the household appliance to a prohibitive extent.

Within this frame, the present invention has the aim of providing a system for programming a household appliance having standardized operating programs, which allows for improving the control system of the appliance itself through the addition, in the time and under specific user's necessities, of durable programs which are designed according to the user's specific requirements.

Said aim is obtained according to the present invention by a system for programming a household appliance having an electronic control, of the type being able to execute a plurality of programs for the control of the realization of a group of operations for the treatment of the items onto which the action of the household appliance is directed, said appliance having a control system comprising:

- a microcontroller,
- first memory means, being associated to said microcontroller, wherein first information are retained, which allows the control system to execute a given number of basic programs of the appliance;
- means for interfacing said control system to an external electronic programming device;
- a control panel residing on the appliance, for the selection and the control of the execution of said basic programs;

characterized in that:

- said first memory means are write-protected, so as to inhibit the modification of said

first information;

- second memory means, of the writable and erasable type, are associated to said microcontroller, apt to receive and retain second information, which allow the control system to execute additional programs, being different from said basic programs;
- said control panel residing on appliance is apt for selecting and commanding the execution of said additional programs in addition to said basic programs;

where said second information are encoded and stored in said second memory means for an undetermined time, up to a possible subsequent modification or cancellation, through said external electronic device.

Further embodiments of the system for programming a household appliance having an electronic control according to the present invention are described in the attached dependents, which form an integral part of the present description.

Further aims, features and advantages of the present invention will become apparent from the following detailed description and annexed drawings, which are supplied by way of non limiting example, wherein:

- Fig. 1 shows schematically a system for programming a household appliance having an electronic control according to the present invention;
- Fig. 2 shows schematically a possible embodiment of the control system of a household appliance according to the present invention;
- Fig. 3 shows schematically a display device of a household appliance used in the system according to the present invention;
- Fig. 4 shows schematically an example of a video display of a managing program or editor, used in the system according to the present invention.

As mentioned above, the idea at the basis of the present invention is to provide a household appliance having conventional functions, i.e. equipped with common basic programs, which has, however, the peculiar feature of being already prearranged for receiving and retaining new operating programs, which come from outside and are designed according to specific user's requirements; according to the invention, the new operating cycles of the

appliance, and therefore the new programs, are designed and stored in the appliance control system through an external electronic device being programmed to this purpose.

According to the invention, the appliance control system is at least partially of the electronic type and comprises a duly prearranged microcontroller, to which suitable memory means are associated; a protected part (i.e. which cannot be modified) of the memory means contains the information required for executing the basic or standard operating cycles of the household appliance, whereas a free modifiable part of the memory means is provided for storing new operating cycles which originates the new programs.

The control system can be interfaced with said external electronic device, which has the aim of allowing the user to create and insert in a simplified mode, within the above said memory means, new operating cycles of the household appliance which originate the new programs; to this purpose, the appliance control system provides for a proper interfacing module, preferably being and of a low cost, which forms an optional component of the appliance itself.

On the other hand, the control panel of the household appliance according to the invention has a common appearance and a low cost, and therefore equipped with usual knobs, push-buttons and at least a simplified display device, so that the user may easily use the basic functions and operating cycles of the appliance; according to the invention, said control means are then also used for selecting new operating cycles once they are stored in the appliance control system and they have originated the new programs.

In Fig. 1, reference 1 indicates schematically a household appliance according to the present invention, which in the give example is a cooking oven.

The oven 1 has a panel 2 containing control and display means, which comprise in particular:

- a switch 3, for switching the oven on;
- a selector 4, for the possible manual setting of the internal temperature of the cooking chamber of the oven;
- a pair of keys 5 (forward - backward), for selecting an operating program of the oven;

- a display 6, for the identification, in a numerical and/or alphabetical and/or graphical way, of the operating programs being available on the oven, and other possible useful information (such as time, fault alarm messages, etc.).
- a key 7, for starting and/or stopping the program selected through buttons 5 and display 6;
- a key 8, for enabling the programming and/or the displaying of the time on the display 6.

The oven 1 has an electronic control system, whose structure is shown schematically in Fig. 2. Such a control system comprises an electronic microcontroller MP, being able to interpret the controls inputted through the panel 2 and consequently manage the operation of the oven 1.

Memory means ME are associated to the microcontroller, at least a part of which is of the electrically writable and erasable type; at least three different memory areas can be identified in the memory means ME of Fig. 2.

In a first area ME1 of the memory means ME, information reside permanently, which relate to the general structure of the operating cycles of the oven 1; and the logic which governs their execution, or, in other words, the control program of the oven itself and the data relating to the operating cycles which the appliance can perform, consisting in their turn of phases which are characterized by determined operating parameters relating to the internal devices of the appliance.

Just by way of example, in the instance of the oven 1, for an operative cycle a subdivision can be provided into an initial preheating phase, followed by three or more cooking phases (in the instance of a laundry washing machine, the program may be split in a prewash cycle, a wash cycle, a rinsing cycle, a spinning and/or drying cycle, each cycle comprising one or more phases).

The memory area ME1 is protected, in the sense that the information contained therein cannot be modified by the user; to this purpose, the memory area ME1 preferably consists of a portion of the program memory of the microcontroller MP.

A second area ME2 of the memory means ME is provided for storing the above cited

operating parameters characterizing the various phases into which some specific standard operative cycles of the household appliance are subdivided; in other terms, the groups of parameters being stored in the area ME2 relate to standard operative cycles, and therefore to the basic programs, available on the appliance at the time of its purchase, and which allow its immediate use.

Such basic programs are those normally executed by a conventional household appliance; therefore, in the instance of an oven apt for the conventional infrared cooking, reference is made to the capability of selecting the cooking program through the controls on the panel 2, choosing a relevant temperature and eventually a cooking time.

Also the memory area ME2 is protected, in the sense that its contents cannot be modified by the user; this is due to the consideration that the parameters stored therein refer to the basic functions of the household appliance. Consequently, also the memory area ME2 may consist of a portion of the program memory of the microcontroller MP, or be constituted by a memory of the ROM type.

A name is associated to each group of operating parameters stored in ME2, relating to a determined operating cycle, which is preferably expressed in alphabetic and/or numerical and/or graphical characters, allowing for a univocal identification of a determined program of the appliance. Therefore, the basic programs available can be sequentially scrolled on the display 6, by using the keys 5, in order to select the desired one; preferably, the identifying sign of each program (which is substantially associated to the group of operating parameters characterizing each execution phase of that cooking program) consists of numerical information (program order number) and alphabetic or alphanumerical information (real program name, consisting of a determined number of alphabetic and/or numerical characters describing its function, such as "Static Cooking", "Ventilated Cooking", "Dual Grill", etc.); on the other hand, nothing hinders the use of a proper graphical symbol as an identifying sign for each program, such as an "icon", eventually associated to a name expressed in alphabetic or alphanumerical characters.

Fig. 3 shows by way of example a possible embodiment of the display 6, such as of the

liquid crystals type, and of the information represented on it; in the upper portion of the display 6 the program number is represented, whereas the lower portion is used for displaying the assigned name, through alphanumerical characters; for example, the upper and lower portion of the display 6 could allow at least a display of five and fourteen alphanumerical characters, respectively.

In the instance of an oven, the parameters contained in the memory area ME2 may concern the phase duration, the temperature inside the cooking chamber, the configuration of the heating elements, the availability or not of ventilation and the mode of operation which the relevant oven actuators (which just manage the heating elements and the fans) must follow during that phase.

Such actuators, which are controlled by the microcontroller MP in function of the selected program and may consist for instance of relays and/or triacs, can be identified in Fig. 2 with the relevant devices (heating elements and fans) managed by them, which are shown schematically with A1, A2, A3, A4 and A5. Practically, such devices may consists of a heater underneath the cooking chamber, a heater behind the cooking chamber, a grill heater inside the cooking chamber, a steam generator, an air circulation fan (in the instance of a washing machine the devices may consist of one or more water heaters, a motor for agitating the drum with determined frequencies, directions and speeds, a heater and/or drying fan, a detergent dispenser, a water level control pressure switch, etc.); obviously, the control system comprises suitable sensor means of the operating conditions of the oven 1 (such as a temperature sensor), not shown in the figures for simplicity's sake.

Finally, a third area ME3 of the memory means ME is provided for receiving the parameters characterizing the various phases into which additional operative cycles of the household appliance are subdivided, which are generated and/or stored therein on user's request, through an electronic device which can be interfaced with the oven 1, and which therefore determines new programs.

Unlike the areas ME1 and ME2, the contents of the memory area ME3 are freely writable, erasable and modifiable according to the user's requirements; to this purpose, the memory

area ME1 preferably consists of an electrically writable and erasable memory, in particular a memory of the EEPROM type.

Obviously, also in this instance, each group of parameters relating to the phases of a specific cycle eventually stored in the area ME3 has an associated name and/or order number and/or graphic sign, for allowing the univocal identification of the relevant program, as previously described with reference to the contents of the memory area ME2 (for example, "Roastbeef", "Pizza", "Lamb", etc.).

Obviously, the identifying information of each program and therefore of the relevant operating cycle (for a basic program or a new program), are stored in the memory means ME2 or ME3, respectively.

Then, in other terms, according to the present invention, the oven 1 has initially a sort of "intelligence" residing in the memory areas ME1 and ME2, for obtaining a certain number of basic or standard programs (for example seven); the user has then the opportunity of adding in time the information relating to new programs generated according to the user's specific requirements or wishes, and storing them in the memory area ME3.

By way of example, the memory area ME3 may be provided for containing the parameters characterizing other thirty-three additional programs (or even more, depending on the size chosen for the memory ME3), which can be inserted in the control system of the household appliance through an external electronic device.

To this purpose, the control system of the oven 1 has a proper interface IN (Fig. 1) of a known type, through which the microcontroller is able to communicate with the external world; in the application according to the present invention, any microcontroller MP having an asynchronous serial line can be suitable, so that the interfacing means IN may consist of a simple standard serial port (type EIA - RS232); this solution obviously allow for interfacing the control system of the oven 1 directly to a Personal Computer, which therefore would represent the above external electronic device, required for generating/storing the new programs of the household appliance.

In a more sophisticated technically embodiment, but surely more practical for the user, the

interface IN may consist of an adapter, in itself known, which allows for connecting the control system of the oven 1 to a "home bus", which uses for instance the same electric mains as the means for the bi-directional data transmission (*power line carrier*), in conformity with the transmission rules being associated to a specific protocol, such as LonWorks of Echelon (USA), or EHS (European Home System), or CEBus (USA), or EIB (Siemens), etc.

Back to Fig. 1, the case is there represented of interfacing the control system of the oven 1 to a generic power line carrier bus, by means of an adapter IN, where the home electric network RE is used as a transmission means.

Always in Fig. 1, a Personal Computer indicated with 10 is equipped with a similar adapter IN for its interfacing to the electric network RE; thus, the control system of the oven 1 and the Personal Computer, duly programmed to this purpose, are able to intercommunicate.

To this purpose, according to the present invention, on the Personal Computer 10 a special managing software is present, called "editor" in the following, which provides for at least the following functions:

- possibility of reading, from the memory ME, the operating parameters characterizing the various phases of the operating cycle (or the operating cycles) relating to each basic program of the oven 1, but with no possibility of modifying the contents of the memory area ME2 of the appliance control system; the selection of the parameters to be read by the Personal Computer 10 is based on an identifying code assigned to the program;
- possibility of modifying the above parameters characterizing the basic programs of the oven 1; however, only the new values can only be saved in the memory area ME3, by pairing them with an identifying code being different from that assigned to the original basic program residing in the memory area ME2;
- possibility of editing new cooking programs, i.e. characterized by different values for the operating parameters of the various phases of the operating cycle, even being entirely different from the ones already contained of the memory area ME2 (and eventually also ME3), and of storing them in the memory area ME3 with a new

identifying code (obviously, nothing hinders the user from generating such new programs starting from the programs already possibly contained in ME3).

Preferably, the editor according to the present invention will be supplied free of charge or at a minimum cost for the user purchasing the household appliance, on a suitable magnetic or optical carrier (Floppy Disk or CD ROM) or through telecom network (for example, Internet).

Therefore, as it will be appreciated, in this the possibility is offered of generating real and new operating programs for the household appliance, which may be designed by user according to his specific requirements or habits and saved permanently in the control system of the appliance, where they may be retained for an unlimited time or until a likely subsequent modification or cancellation by the user takes place.

Concerning the specific function of generating new programs, the editor provided according to the present invention allows for selecting, within the frame of each phase of an operating cycle, the relevant characteristic parameters, which in the instance of the oven 1 may refer, as said, to the phase duration, the desired temperature in the cooking chamber, the type of ventilation (if desired), the type of heat sources to be used and their activation modes. Obviously, these are just a few examples relating to an oven, and in no ways limiting examples.

The above parameters are displayed on the video of the Personal Computer, preferably in a graphic mode as schematically represented in Fig. 4, where a possible video display of the editor is shown by way of example.

Four zones can be substantially identified in this figure, for the displaying and inputting of data, and precisely:

- a first zone indicated with I, being dedicated to the selection of various editor options;
- a second zone indicated with II, identifying the appliance program being currently displayed/edited;
- a third zone indicated with III, being dedicated to the selection of the phase of interest out of the phases into which the relevant operating cycle of the appliance is subdivided,

and to the displaying of some parameters relating to such phases;

- a fourth zone indicated with IV, being dedicated to the complete displaying and modification of the parameters of the phase (selected in the zone III) of the program (identified in the zone II).

As it can be seen, the zone I consists of a *tool bar*, such as typically used in a Windows® environment, and therefore having "scroll down" menus. In the example being represented in the figure, the menus "File", "Edit" and "Help" are provided. In particular, by means of the menu "File", which is highlighted, options may be selected, such as:

- creating a new program for the oven 1 (option "New");
- opening an existing program (option "Open"), residing in the memory area ME2 or ME3 of the control system of the oven 1 (or eventually in the memory of the Personal Computer 10);
- closing the program being currently on displaying or editing program, without saving it (option "Close");
- saving the edited or modified program (option "Save"), to which a name is already associated to; such an option, as explained above, allows for saving a program only in the memory area ME3 or in the memory of the Personal Computer;
- saving the edited or modified program, by assigning to it a name being different from the original one (option "Save as");
- exiting the editor (option "Exit").

The zone II is instead destined to identify the program being displayed/edited on the editor, by means of the indication of its assigned number and the relevant alphanumerical name; in the specific instance shown in the figure, the program of interest is identified by the number "16" and the name "Roastbeef 1", respectively.

In the zone III the graphic representation is provided, on a Cartesian plane, of the various phases forming the operating cycle controlled by the program in course of display/editing, where the duration of the various phases (and then, globally, the duration of the entire cycle) is on the abscissa, and the temperature value of the cooking chamber of the oven 1.

to be reached and maintained during such phases, is on the ordinate.

Thus, the graph globally points out a curve being representative of the progress of the temperature during the entire operating cycle, or, in other words, the thermal profile of the cooking cycle.

In the above example, the cycle provides for four phases, being represented by the four rectangles marked 1, 2, 3, 4 (the information concerning the splitting of the operating cycle into the four steps pertains, as previously mentioned, to the contents of the memory area ME1).

For the selection of the phase to be modified, the computer keyboard can be used directly, or more simply positioning the pointer of a *mouse* in correspondence of the rectangle of interest, and clicking there.

In the case of Fig. 4, the phase 1 has been selected, i.e., the first rectangle from the left; this selection is highlighted by means of a thicker perimetric line of the rectangle.

Finally, the zone IV is used for the displaying and the possible modification of the parameters for the selected phase of the operating cycle.

In the example of Fig. 4, therefore, the zone IV represents the various parameters characterizing the step 1, previously selected in the zone III.

This zone IV reports in its upper portion the indication of the selected phase (1 - Preheating) and in the lower portion the "tools" for selecting and modifying the various parameters.

As it can be noticed in the figure, such parameters and the relevant instruments concern (from left to right):

- the phase time, which can be set by means of the mouse (rotating the symbol of an index selector), or directly through the keyboard (through specific keys, or placing the mouse pointer in a special field and inputting the requested value); this corresponds in a real time, in the zone III, to a change of the width of the corresponding rectangle; in the example, a duration of 40 minutes has been selected for the phase 1;
- the phase temperature, which can be set with in the same ways as for the above phase

time; consequently, in the zone III and in real time, a modification in the ordinate value of the segment of the temperature curve and of the relevant inclination within the corresponding rectangle will take place; in the example, a temperature of 120 Centigrades degrees has been selected for the phase 1;

- the area, in the cooking chamber, where the heat sources to be used during the phase are located, where the possibility of selection is offered through option buttons, which can be actuated through the mouse and are associated to the upper are, the lower are and the central-rear are, respectively; the example of the figure shows that the upper are and the lower are have been selected, to which specific heat sources are associated depending on the type of oven;
- the type of ventilation to be possibly used during the phase, with the possibility of choosing between "slow, normal, fast"; in the example, the ventilation is not activated (the symbols of the option buttons are not blackened);
- the mode of use of the grill, if desired, with the possibility of choosing between single and double power, always through option buttons which can be actuated by the mouse; in the example, the double grill power has been selected.

It is clear that, in order to modify the operating parameters associated to the subsequent phases of the cycle (2, 3 and 4), the user only has to select the rectangle of interest in the zone III, with the consequent displaying of the modifiable parameters for that phase in the zone IV.

Once all settings/modifications have been executed for the various phases of interest, the user can then proceed with the storing of the new program (for instance, by using the option "Save as" in the zone I), in the memory area ME3 of the control system of the oven.

It will be appreciated that, by means of the editor described above, the possibility is also offered for the user to suppress some of the phases into which the operating cycle of each program is subdivided, simply by setting its duration to a nil value.

At any rate, the editor program preferably provides for proper controls of the operations actuated by the user, in order to avoid wrong or improper programming, which could lead

to unsatisfactory results or performances (such as, in the instance of a laundry wash machine, setting a "new" wash program for woolens at a temperature of the washing liquid of 90°C!).

From a practical standpoint, the present invention operates as follows.

In its initial standard version, the oven 1 has a basic intelligence of its own, being encoded in the memory areas ME1 and ME2, which allows the household appliance to execute some standard programs, such as a number of seven, which cannot be modified by the user. In this situation, after switching the oven on through the switch 3 of the control panel 2, the display 6 shows the number and name and/or symbol of the first program being available in the memory area ME2; the user may then scroll sequentially the indications relating to the other six available programs on the display 6, by using the keys 5 (forward - backward). Once the desired program has been reached, this can be started by pressing the key 7 (eventually, the user can modify the temperature value, if desired, actuating the selector 4). The oven 1 then perform the operating cycle relating to the program that has been chosen.

As it can be seen, therefore, the oven 1 operates in its basic version according to classic procedures.

Should the user desire to add new cooking programs to the oven 1, a Personal Computer 10 (with its programs editor installed) shall be used, which can be interfaced directly to the oven control system through a suitable cable connected to the standard serial line RS232, or through a proper "home bus".

In this way, the user can generate his own cooking program through the editor, being designed according to his specific requirements, as described above.

Once the new program has been edited, the user saves it in the memory area ME3 of the control system of the oven 1, according to the procedures previously described.

Eventually, the editor can be provided with options which allows for executing the new program on the oven 1 under the direct control of the Personal Computer 10, i.e. simply using the control system of the appliance as a executor of the commands of the Personal Computer (therefore, the oven 1 operates as a simple peripheral controlled by the PC

itself); this, for instance, to allow the user to previously verify the efficiency of an operating cycle, before proceeding to a final storage of the relevant program in the memory area ME3.

To this effect, the user may also decide to save a new program in the mass storage of the Personal Computer, instead of saving it directly in the control system of the oven 1; it has to be noticed, anyway, that the editor is so designed for suitably guiding the user during the various saving options and that, as said above, the parameters relating to the new program can be saved for an unlimited time, until a likely subsequent modification or cancellation by the user takes place.

Once the new program has been stored in the control system of the oven 1, the program can then be selected directly through the control panel 2 of the appliance, through the keys 5 and display 6.

Accordingly, if in the basic version of the oven 1 only the identifying data of the seven basic programs could be sequentially displayed on the display 6, now also those data relating to the new programs can be displayed, which the user may add up to a maximum number admitted by the capacity of the memory area ME3.

Thus, once the new programs have been stored in ME3, they can be selected and started in the classic mode, i.e. using the normal means provided to that purposes on the oven 1, without requiring the Personal Computer 10.

It is also clear that the user will be free to cancel the new programs residing in the area ME3 of the memory of the control system of the oven, or those available in the mass storage of the Personal Computer 10.

From the above description, it is clear how the basic version of the oven according to the present invention can perform all the conventionally known functions associated with it and how its cost is practically not affected with respect to a conventional mid-level household appliance with an electronic control.

The same household appliance, once interfaced with the Personal Computer and by means of the relevant editor, can be improved in a cost-effective way, with a lot of new programs,

differing from the basic programs, whereby the user also has the possibility of:

- dynamically changing the configuration of the heating elements during the cooking process, which fact allows for achieving suitable temperature profiles relating to particular recipes;
- combining in an optimal way, in particular for the ovens having mixed cooking systems (such as infrared + microwaves), the cooking aids provided by each one of said systems, so as the user has no need to plan specific sequences of manual operations;
- configuring at will the sequence of operation the actuators of the oven (lower heater, upper heater, rear heater, grill, fan, etc.), without any manual operation.

Finally, it has to be noticed that the present invention, even if described with particular reference to a cooking oven, is clearly applicable to any other household appliance equipped with an electronic control system.

Therefore, from the above description the features of the present invention are clear, as also clear are its advantages.

The main advantage of the present invention, which represents its most significant element, is to the benefit of the user and refers to the possibility of creating in a simple way new operating programs, even if having a complex structure, for their storage in the appliance control system.

A second advantage for the user lays in the fact that the latter has the possibility of initially purchasing the basic version of the appliance, and then add new programs at a later time, only if desired and with an extremely limited cost.

It is evident, in fact, that if the user already have a Personal Computer (as it is quite common nowadays), the cost required for "increasing" the capacity of the control system of the oven 1 are minimal, since only the interface module is required; moreover, considering that most household appliances having an electronic control are normally provided with an interface for communicating with the external world (for technical service purposes), it is clear that the enrichment of the oven 1 can practically take place at a zero cost.

It is obvious that many changes are possible for the man skilled in the art to the

programming system described above by way of example, without departing from the novelty of the invention.

For instance, the possibility is cited of providing a specific customers' service, for supplying new programs to the appliance, or for creating new programs complying with the user's specific requirements or wishes, should the user have no Personal Computer available in his/her home environment, or not wish to generate such programs directly.

In this case, an employed of said customers' service, will connect his own portable Personal Computer, having the editor described above, to the user's appliance for creating and/or adding the desired programs.

In a particularly advantageous embodiment of the present invention, the cited editor may be provided for allowing the user to download the new operating programs for the appliance from a remote systems, for their storing in the memory area Me3; obviously, such new programs can be stored in the control system of the oven 1 in their original form, or with modifications performed through the editor by the user himself.

To this purpose, and as represented in the example of Fig. 1, a standard telephone network RT can be used, through which the Personal Computer 10 equipped with a modem can perform a connection to a proper Internet site, where new programs for the appliance are made available, such as cooking programs for recipes prepared by famous cooks or, in the instance of a washing machine, programs specifically provided for the washing of specific type of laundry or crockery.

Also the system described above, using a remote connection, may be used according to two procedures:

- downloading and adding to the appliance control system a new program, to be locally activated, i.e. through the controls panel 2 of the oven 1;
- executing the program on the oven 1, but under the control of the Personal Computer 10, i.e. by-passing at least partially the appliance control system and using the latter as a simple peripheral.

It is clear that the above Internet site may be updated at regular intervals, with new recipes

and relevant programs made available to the users of the household appliance, and it is also clear that the editor being present on the Personal Computer 10 may also be provided for the transmission to a remote address, through a telephone line, of files relating to programs created by the user (for example for a recipes exchange among various people).

In this situation, the editor will be provided to load in the memory of the Personal Computer 10 the programs contained in the memory area ME3 of the oven control system, and send them through the modem to other users, or to a special mailbox of the cited Interned site.

Another possible embodiment concerns the type of displaying of the parameters on the editor, which in addition or as an alternative to the graphic form, may be in a tabular form, listing the modifiable parameters for the various phases.

According to another possible embodiment, the editor may be provided for allowing the displaying in real time, on the video of the Personal Computer 10 (for example in a graphic form) of suitable information relating to the operating status of the appliance, such as the parameters identifying the progress status of a performed program; for instance, always with reference to a cooking oven, such data may concern the current temperature, the heat sources being active, the time spent since the start of the cooking, the estimation of the time needed to reach the end of the cooking, the estimation of the food cooking level, likely indications for users should their manual action be required, diagnostic signals for technical assistance, etc.

Similarly, the editor may be provided for allowing to program in time the execution of an operating cycle of the appliance.

The information relating to the subdivision into various phases of the operative cycles of the appliance, as well as the information relating to the specific parameters of the phases of the basic or standard cycles, may reside in read-only memory means (ROM) or directly in the program memory of the microcontroller MP; however, it is clear on the other hand that the information relating to the parameters characterizing the phases of the basic or standard cycles may also be contained within protected areas of read- write memory means.

CLAIMS

1. System for programming a household appliance (1) having an electronic control, of the type being able to execute a plurality of programs for the control of the realization of a group of treatment operations of the items onto which the action of the appliance (1) is directed, said appliance (1) having a control system comprising:

- a microcontroller (MP),
- first memory means (ME1,ME2), being associated to said microcontroller (MP), wherein first information resides, which allows the control system to execute a given number of basic programs of the appliance (1);
- means (IN) for interfacing said control system to an external electronic programming device (10);
- a control panel (2) residing on the appliance, for the selection and the control of the execution of said basic programs;

characterized in that:

- said first memory means (ME1,ME2) are write-protected, so as to inhibit the modification of said first information;
- second memory means (ME3), of the writable and erasable type, are associated to said microcontroller (MP), apt to receive and retain second information, which allow the control system to execute additional programs, being different from said basic programs;
- said control panel (2) residing on appliance allows for selecting and commanding the execution of said additional programs in addition to said basic programs;

where said second information are encoded and stored in said second memory means (ME3), for an undetermined time, until a possible subsequent modification or cancellation, through said external electronic device (10).

2. System, according to claim 1, characterized in that said first information at least partially relate to the general structure of the programs that can be executed by the appliance (1) and to the logic governing their execution.

3. System, according to the previous claim, characterized in that said first information relate to the subdivision of said programs into various treatment phases, where each one of said phases is in turn characterized by determined values of control parameters of internal devices or actuators (A1-A5) of the appliance.

4. System, according to the previous claim, characterized in that said first information at least partially relate to the values of said control parameters characterizing the various phases into which said basic programs are subdivided.

5. System, according to claim 3, characterized in that said second information at least partially relate to the values of said control parameters characterizing the various phases into which said additional programs are subdivided.

6. System, according to at least one of the previous claims, characterized in that said first and/or second information comprise the duration of each of said phases, a temperature value being characteristic for said phase, the configuration and/or the mode of operation which the internal devices or actuators (A1-A5) of the appliance must have during that phase.

7. System, according to claim 1, characterized in that said first and/or second information comprise data for identifying in an univocal way a determined program which can be executed by the appliance (1).

8. System, according to claim 1, characterized in that said controls panel (2) comprises a display device (6).

9. System, according to claims 7 and 8, characterized in that means (5) are provided for enabling the sequential displaying on said display device (6) of data identifying said programs.

10. System, according to at least one of the previous claims, characterized in that the data identifying a program comprise an order number.

11. System, according to at least one of the previous claims, characterized in that the data identifying a program comprise a name in alphabetical and/or numerical and/or graphic characters.

12. System, according to at least one of the previous claims, characterized in that the data identifying a program comprise numerical information and alphabetical or alphanumerical information.

13. System, according to claim 1, characterized in that said first memory means (ME1,ME2) comprise at least a part of the program memory of said microcontroller (MP).

14. System, according to claim 1, characterized in that said first memory means (ME1,ME2) comprise a memory of the ROM type.

15. System, according to claim 1, characterized in that said second memory means (ME3) comprise a memory of the EEPROM type.

16. System, according to claim 1, characterized in that said interfacing means (IN) comprise a serial port.

17. System, according to at least one of the previous claims, characterized in that said interfacing means (IN) comprise an adapter for connecting said control system to a home bus, using in particular as the means for the bi-directional data transmission the same electric network (power line carrier).

18. System, according to claim 1 or 3, characterized in that said external electronic device (10) comprises means for reading said first and/or second information from said first memory means (ME1,ME2), or the values of said control parameters characterizing the various phase into which said basic programs and/or said additional programs are subdivided.

19. System, according to claims 7 and 18, characterized in that said external electronic device (10) comprises means for modifying said first information, with only the possibility of storing the relevant modified information in said second memory means (ME3) and/or in a mass storage of said external electronic device (10), pairing said modified information to identifying data which are different from the ones assigned to the basic program of origin.

20. System, according to claim 5, characterized in that said external electronic device (10) comprises means for editing for said additional programs and their storage in

said second memory means (ME3).

21. System, according to claim 4 or 5, characterized in that said external electronic device (10) comprises means for the displaying in a graphic form of said control parameters.

22. System, according to claim 7, characterized in that said external electronic device (10) comprises means (II) for displaying said identifying data of the selected program of the appliance.

23. System, according to claim 3, characterized in that said external electronic device (10) comprises means (III) for selecting a phase of interest among the phases into which a program which can be executed by the appliance (1) is subdivided and/or displaying at least some of said control parameters relating to such a phase.

24. System, according to the previous claim, characterized in that said external electronic device (10) comprises means (IV) for displaying all the modifiable parameters pertaining to the selected phase.

25. System, according to claim 3, characterized in that said external electronic device (10) comprises means for generating and representing a Cartesian plane, which shows, on the abscissa, the duration of the various phases forming a program, and on the ordinates, another parameter relating to said phases, in particular a temperature value.

26. System, according to claim 3, characterized in that said external electronic device (10) comprises means for suppressing at least one of the phase into which each additional program is subdivided.

27. System, according to at least one of the previous claims, characterized in that said external electronic device is a duly programmed Personal Computer (10).

28. System, according to at least one of the previous claims, characterized in that means are provided for executing, under the direct control of said external electronic device or Personal Computer (10), one of said additional programs or for using the control system of said appliance (1) simply as an executor of controls coming from said external electronic device or Personal Computer (10), said appliance (1) behaving like a simple

peripheral connected to said electronic device or Personal Computer (10).

29. System, according to one or more of the previous claims, characterized in that said external electronic device (10) comprises control means for avoiding wrong or faulty programming, which may lead to unsatisfactory results or performance of said appliance (1).

30. System, according to claim 1, characterized in that said external electronic device (10) comprises means for the connection to a telephone line (RT) and means for communicating with a remote system through said line, said external electronic device being in particular a Personal Computer (10) equipped with a modem and said remote system comprising an Internet site.

31. System, according to the previous claim, characterized in that said external electronic device (10) is apt to download said second information from said remote system, for their possible storage in said second memory means (ME3).

32. System, according to claim 30, characterized in that said external electronic device (10) comprises means for sending said second information to said remote system, said sending means comprising in particular means for loading said second information contained in said second memory means (ME3) into a memory of said external electronic device (10), and send them to said remote system.

33. System, according to claim 1, characterized in that said external electronic device (10) comprises means for displaying in a real time information concerning the progress status of a program being running on said appliance (1).

34. System, according to claim 1, characterized in that said external electronic device (10) comprises means for programming in time the execution of a program of said appliance (1).

35. System, according to one or more of the previous claims, characterized in that said appliance is a household cooking oven (1).

36. System, according to one or more of the previous claims, characterized in that said appliance (1) is a washing machine.

37. System, according to claim 35, characterized in that said external electronic device (10) comprises means for selecting one of the phases into which an additional cooking program is subdivided, and means for modifying:

- the duration of the selected phase, and/or
- the temperature to be reached inside the oven during the selected phase, and/or
- the configuration and/or operating mode of heat sources for the oven (1), and/or
- the type of ventilation of possible use for the selected phase, and/or
- the modes of a possible use of a grill heater during the selected phase.

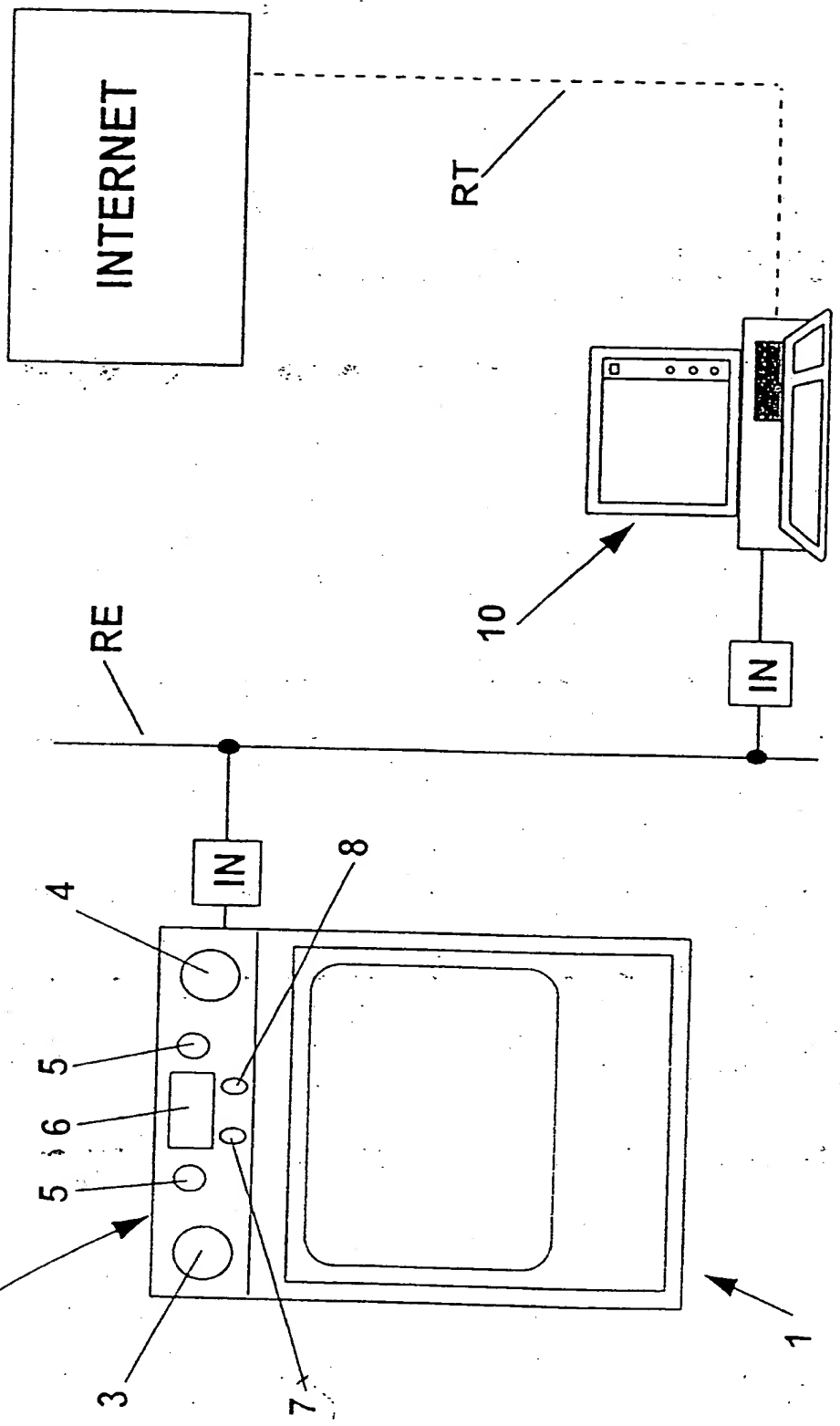


Fig. 1

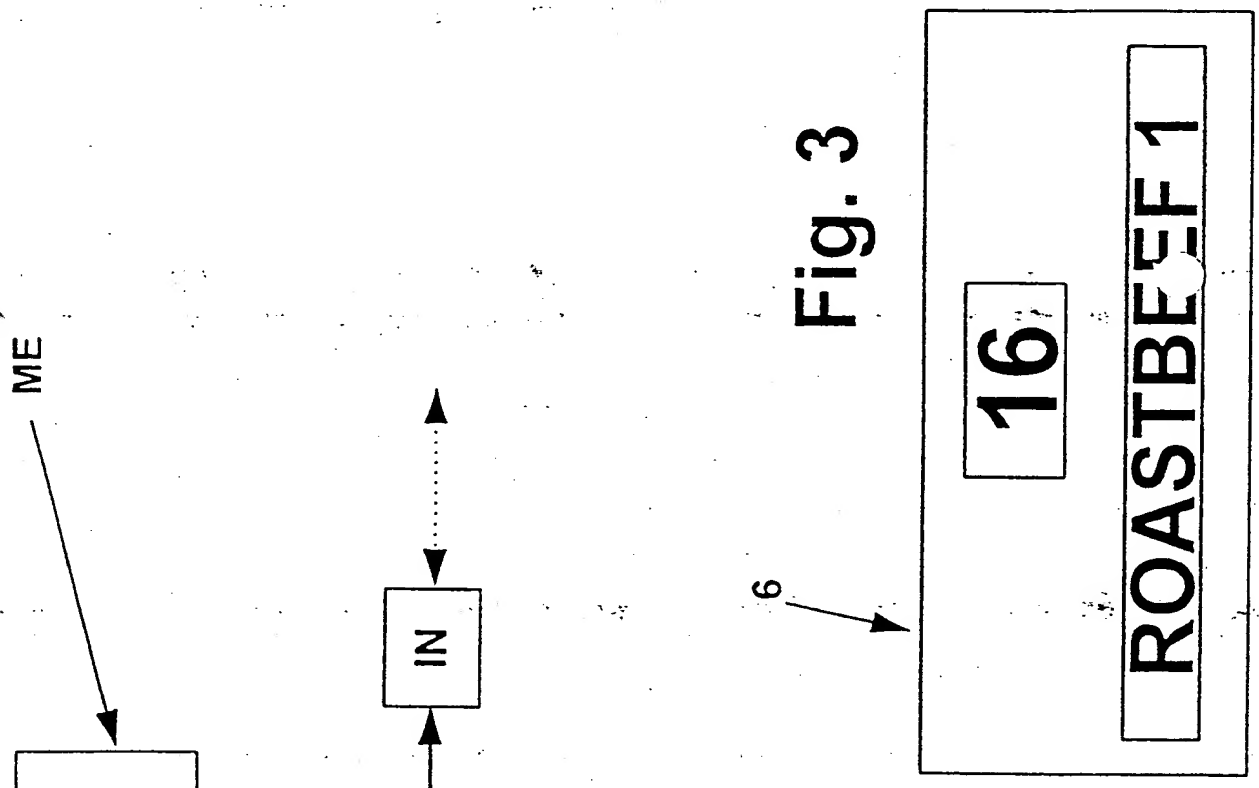


Fig. 3

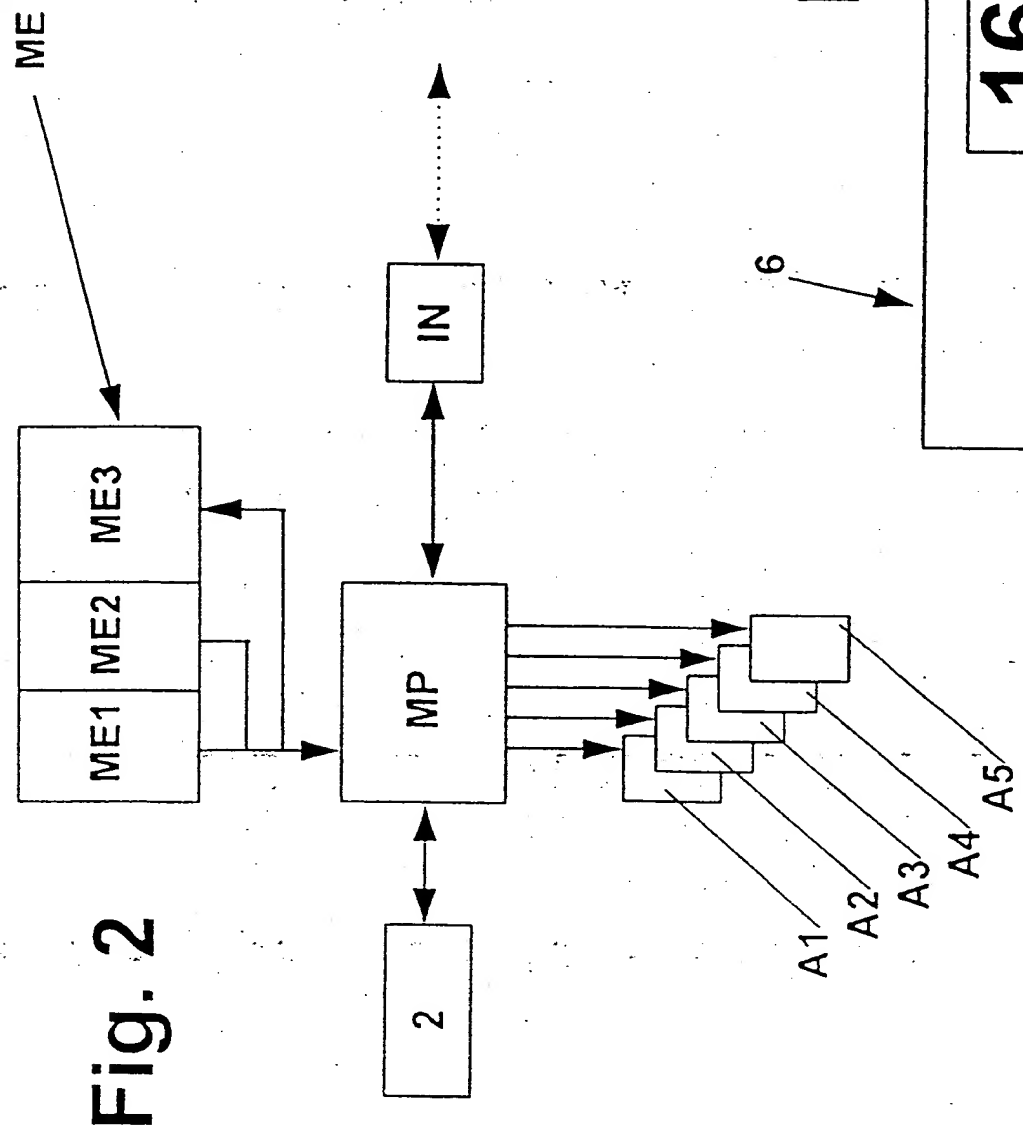
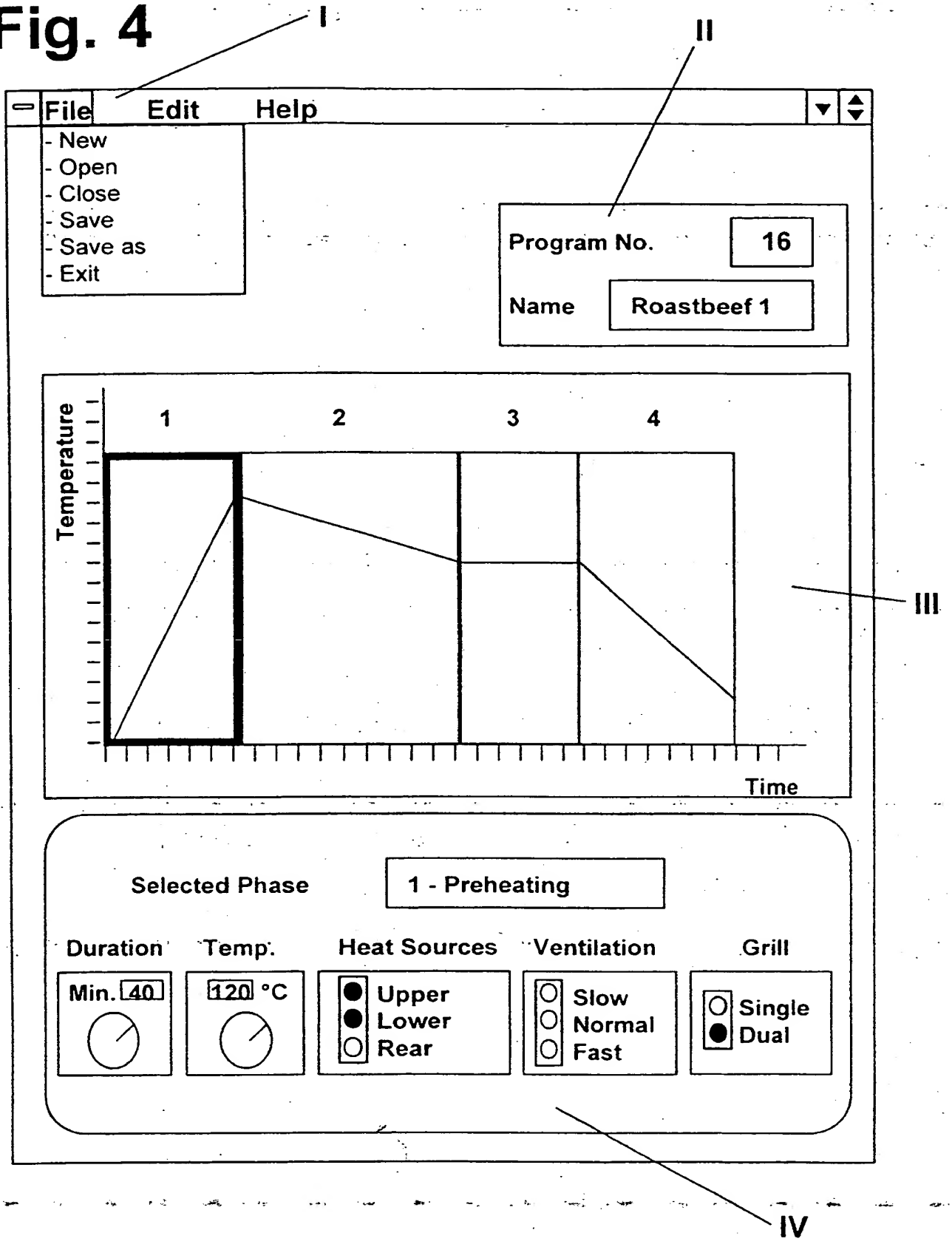


Fig. 2

Fig. 4


I
II
File
Edit
Help
- New
- Open
- Close
- Save
- Save as
- Exit
Program No.
16
Name
Roastbeef 1
Temperature
1
2
3
4
Time
III
Selected Phase
1 - Preheating
Duration
Temp.
Heat Sources
Ventilation
Grill
Min. 40
120 °C
Upper
Lower
Rear
Slow
Normal
Fast
Single
Dual
IV

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
ME012		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/IB 99/01593	29/09/1999	30/09/1998
Applicant		
MERLONI ELETTRODOMESTICI S.P.A. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

[ ] the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

[ ] contained in the international application in written form.

[ ] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readble form.

[ ] the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

[ ] the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. [ ] **Certain claims were found unsearchable** (See Box I).

3. [ ] **Unity of invention is lacking** (see Box II).

4. With regard to the **title,**

[X] the text is approved as submitted by the applicant.

[ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

[X] the text is approved as submitted by the applicant.

[ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 1

[X] as suggested by the applicant.

[ ] because the applicant failed to suggest a figure.

[ ] because this figure better characterizes the invention.

[ ] None of the figures.

INTERNATIONAL SEARCH REPORT

Inter[redacted]l Application No
PCT/IB 99/01593

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G05B19/042

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 588 107 A (ELECTROLUX AB) 23 March 1994 (1994-03-23) abstract page 4, line 21 -page 5, line 17 page 12, line 19 -page 13, line 6 claims 1,5,13 figure 1 ---	1-37
X	EP 0 391 316 A (ZANUSSI A SPA INDUSTRIE) 10 October 1990 (1990-10-10) abstract column 1, line 54 -column 6, line 55; figure 1 --- -/--	1-37

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 December 1999	28/12/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (-31-70) 340-2040, Tx. 31 651 epo nl, Fax: (-31-70) 340-3016	Helot, H

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Inte[redacted]nal Application No
PCT/IB 99/01593

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 649 933 A (MERLONI ELETTRODOMESTICI SPA) 26 April 1995 (1995-04-26) abstract column 5, line 6 - line 45 column 14, line 2 -column 15, line 19 figure 1A	1,8, 13-15,36
X	EP 0 684 692 A (EMERSON ELECTRIC CO) 29 November 1995 (1995-11-29) abstract; figure 1	1,13-15

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/GB 99/01593

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0588107 A	23-03-1994	SE 470468 B	02-05-1994
		DE 69318782 D	02-07-1998
		DE 69318782 T	12-11-1998
		NO 933285 A	18-03-1994
		SE 9202687 A	18-03-1994
EP 0391316 A	10-10-1990	IT 1234691 B	26-05-1992
EP 0649933 A	26-04-1995	IT 1261006 B	29-04-1996
		DE 69417146 D	22-04-1999
		DE 69417146 T	12-08-1999
		ES 2130329 T	01-07-1999
EP 0684692 A	29-11-1995	BR 9502547 A	02-01-1996
		CA 2148633 A	28-11-1995
		JP 8066083 A	08-03-1996

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Assistant Commissioner for Patents
United States Patent and Trademark Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 29 May 2000 (29.05.00)	
International application No. PCT/IB99/01593	Applicant's or agent's file reference ME012
International filing date (day/month/year) 29 September 1999 (29.09.99)	Priority date (day/month/year) 30 September 1998 (30.09.98)
Applicant AISA, Valerio	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

28 April 2000 (28.04.00)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer S. Mafla
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

IB9901593

Form PCT/IB/331 (July 1992)

Copy for the Elected Office (EO/US)

PCT/IB99/01593

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92bis.1 and Administrative Instructions, Section 422)

To:

DINI, Roberto
Merloni Elettrodomestici S.p.A.
Ufficio Brevetti e Marchi
Via Pinerolo, 25
I-10060 None
ITALIE

Date of mailing (day/month/year) 02 April 2001 (02.04.01)	
Applicant's or agent's file reference ME012	**IMPORTANT NOTIFICATION**
International application No. PCT/IB99/01593	International filing date (day/month/year) 29 September 1999 (29.09.99)

1. The following indications appeared on record concerning:

[X] the applicant [ ] the inventor [ ] the agent [ ] the common representative

Name and Address	State of Nationality	State of Residence
MERLONI ELETTRODOMESTICI S.P.A. Viale Aristide Merloni, 47 I-60044 Fabriano Italy	IT	IT
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

[X] the person [ ] the name [ ] the address [ ] the nationality [ ] the residence

Name and Address	State of Nationality	State of Residence
WRAP S.P.A. Viale Aristide Merloni, 47 I-60044 Fabriano Italy	IT	IT
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

[X] the receiving Office
[ ] the International Searching Authority
[ ] the International Preliminary Examining Authority
[ ] the designated Offices concerned
[X] the elected Offices concerned
[ ] other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Eugénia Santos
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

003938455

Form PCT/IB/306 (March 1994)

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

DINI,Roberto.
MERLONI ELETTRODOMESTICI SPA
Ufficio Brevetti e Marchi
Via Pinerolo 25
I-10060 None (TO)
ITALIE

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing *(day/month/year)*	31. 01. 01
Applicant's or agent's file reference: ME012	**IMPORTANT NOTIFICATION**

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/IB99/01593	29/09/1999	30/09/1998

Applicant
MERLONI ELETTRODOMESTICI S.P.A. et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/	Authorized officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Kellerer, C Tel.+49 89 2399-2261

Form PCT/IPEA/416 (July 1992)

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

To:
MERLONI ELETTRODOMESTICI SpA
Ufficio Brevetti e Marchi
Attn. DINI,Roberto.
Via Pinerolo 25
I-10060 NONE (TO)
ITALY

Date of mailing *(day/month/year)* 28/12/1999	
Applicant's or agent's file reference ME012	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/IB 99/ 01593	International filing date *(day/month/year)* 29/09/1999
Applicant MERLONI ELETTRODOMESTICI S.P.A. et al.	

1. [X] The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:
The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Fascimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. [ ] The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. [ ] **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

[ ] the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

[ ] no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

Within **19 months** from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within **20 months** from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040. Tx. 31 651 epo nl. Fax: (+31-70) 340-3016	Roger Thomas

Form PCT/ISA/220 (July 1998)

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international pbulication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

BNSDOCID: <XSISA220NOENP4_1_>

NOTES TO FORM PCT/ISA/220 (continu[illegible])

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped),whether

(i) the claim is unchanged;

(ii) the claim is cancelled;

(iii) the claim is new;

(iv) the claim replaces one or more claims as filed;

(v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."

2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."

3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."

4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international appplication is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

BNSDOCID: <XSISA220NOENP4_1_>

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PATENT COOPERATION TREATY

PCT

REC'D 15 JAN 2001
WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
ME012		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/IB99/01593	29/09/1999	30/09/1998

International Patent Classification (IPC) or national classification and IPC
G05B19/042

Applicant
MERLONI ELETTRODOMESTICI S.P.A. et al.

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 8 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
28/04/2000	11.01.01

Name and mailing address of the international preliminary examining authority:

European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer

Helot, H

Telephone No. +49 89 2399 2287

Form PCT/IPEA/409 (cover sheet) (January 1994)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IB99/01593

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).)*:
Description, pages:

1-3,6-20	as originally filed			
4,5	as received on	01/12/2000	with letter of	30/11/2000

Claims, No.:

1-38	as received on	01/12/2000	with letter of	30/11/2000

Drawings, sheets:

1/3-3/3	as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   - ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
   - ☐ the language of publication of the international application (under Rule 48.3(b)).
   - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   - ☐ contained in the international application in written form.
   - ☐ filed together with the international application in computer readable form.
   - ☐ furnished subsequently to this Authority in written form.
   - ☐ furnished subsequently to this Authority in computer readable form.
   - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
   - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	
	No:	Claims	1,11-14,17,19,22,24
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-38
Industrial applicability (IA)	Yes:	Claims	1-38
	No:	Claims	

2. Citations and explanations
   see separate sheet

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1 Reference is made to the following documents:

D1: EP-A-0 588 107;

D2: EP-A-0 391 316;

D3: EP-A-0 649 933.

2 The present application does not meet the criterion set forth in Article 33 (2) PCT because the subject matter of claims 1, 17 and 24 is not new.

2.1 Document D2 discloses a system for programming a household appliance (washer, laundry drier or the like) having an electronic control, being able to execute a plurality of programs for the control of the realisation of a group of washing operations (washer, laundry drier or the like), the appliance having a control system comprising:

- a microcontroller (2),
- first memory means (7), being associated to the microcontroller (2), wherein first information are stored during the manufacturing stage, the first information being used by the control system to execute a given number of first programs of the washing machine, the first program allowing the immediate use of the appliance once the manufacturing has been completed (see column 2, lines 12 to 24);
- means for interfacing (36) the control system to an external electronic programming device (39) (see column 6, lines 27 to 33);
- a control panel (4,22-27) residing on the appliance, for the selection and the control of the execution of the first programs (see column 4, lines 26 to 54).

Furthermore in the system for programming according to document D2:

- the memory means (7) are write-protected, so as to inhibit the modification of the first information (since the memory means (7) are ROM they are write protected by opposition to the EEPROM (8));
- second memory means (8) of the writable and erasable type (EEPROM) are provided for the storage of second information at a user's premises (see column 5, line 51 to column 6, line 1) by means of an external programming device (39), the second information allowing the control system to execute second programs

(column 6, lines 39 to 42) which are different with respect to the first programs; the fact that the second memory means (8) receive information during the manufacturing process (column 2, lines 25 to 47) does not prevent that they receive second information from the electronic programming apparatus at the user's premises, thus, once the appliance has been marketed and installed;
- the control panel (4,22-27) residing on appliance allows for selecting and commanding the execution of all the programs residing in first and second memory means thus equally the second programs (see column 4, line 26 to 44).
It results from the properties of the EEPROM that the second information are encoded and stored in the second memory means (8), for an undetermined time, until a possible subsequent modification or cancellation, through the external electronic device.
Thus, the subject matter of claim 1 lacks novelty with respect to document D2.

2.2 Since all the features defining the household appliance in claim 17 are equally defined in claim 1, the subject matter of claim 17 is not new with respect to document D2.

2.3 The method for programming a household appliance as defined in claim 24 corresponds to the system for programming as defined in claim 1 and is not new accordingly.

3 Document D2 further discloses the additional features of dependent claims 11-14,19 and 22.

3.1 Concerning claims 11-13, the first memory is a ROM (7) which is comprised in the microprocessor (2) (see the figure) and the seconde memory is an EEPROM (8) (see column 2, lines 12 to 24).

3.2 Concerning claim 14, the programming means in document D2 is a personal computer (39) (see the figure).

3.3 Document D2 discloses a washing machine as defined in claim 19 and a display device (25) as defined in claim 22 (see column 4, lines 38 to 44).

4 Claims 2-10,15,16,18,20,21,23,25-38 do not contain any features which, in combination with the features of claim 1 to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33 (3) PCT), the reasons being as follows:

4.1 Concerning claim 2, checking that the functions are allowed is usual (see, e.g. document D1, page 12, lines 47 to 50).

4.2 The additional features as defined in claims 3-6 are related to subdivisions of programs which are usual in the programs for controlling household appliances. (see, e.g. document D3 column 14, lines 2 to 14)

4.3 The additional features of claims 7-10 and 23 are merely related to features for identifying a program that are within the province of the skilled person.

4.4 In the programming system according to document D2, since the personal computer is linked to the microcontroller, the skilled person would use it to control directly the washing machine as defined in claims 15 and 16 in the frame of his daily practice.

4.5 Concerning claim 18, document D2 deals with a washing machine. The skilled person program would apply the teaching of document D2 to an oven which is another type of household appliance in the frame of his daily practice (see, e.g. document D1 abstract and figure 1).

4.6 Concerning claims 20 and 21, the system according to document D1 discloses an interface (36). The skilled person would provide the interface with a serial port in the frame of his daily practice. Document D2 further discloses a connection to other electric appliance. The skilled person would carry out this connection with a home bus in the frame of his daily practice.

4.7 Concerning claims 25 and 26, document D2 discloses a personal computer for programming the microcontroller. If the operator wishes only to modify an existing program, it is usual to down load it from the memory in which is stored namely the ROM(7) and after the program has been modified to only store the modification.

4.8 Document D2 discloses a personal computer for programming. Since it is usual to provide a personal computer with an Internet connection, the skilled person would arrive to the subject matter of claims 27-30 in the frame of his daily practice.

4.9 The skilled person would consider the features related to the programming user interface as defined in claims 31 to 37 as usual programming tools that he would use in the frame of his daily practice to program the household appliance of document D2 from the personal computer (39).

4.10 The additional features defined in claim 38 correspond to the definition of usual cooking operations. Thus, their incorporation in the cooking system according to document D1 would have been regarded as obvious by for the skilled.

Apart form the fact that an industrial appliance for beverage preparation represents a more complex and expensive machine compared to a common household appliance, a solution of the above kind, when referred to a household appliance, would not solve the above problems, save allowing for a durable saving of the parameters most frequently used with reference to the basic programs alone.

Another drawback of the above solution is the limited number of available programs, without any capability of adding new programs to the existing ones.

From EP-A-0 588 107 and EP-A-391 316 systems are known for programming in different way a basic household appliance, during the manufacturing stage of the latter; in this way, it is thus possible to produce several models of a same appliance, the operating programs of which differ depending upon its market of destination.

According to this solutions, the basic household appliance is provided with a control system comprising a microcontroller, memory means, means for interfacing the control system to an external programming device and a control panel, residing on the appliance.

During the manufacturing stage, an external electronic programming device is connected to the control system, for storing within the memory means all the operating programs being specifically intended for the appliance model under production; said programs are then selectable through the control panel, for allowing the immediate use of the appliance, once the latter has been marketed.

It is the object of the present invention to indicate a solution for the above problems, without increasing the cost of the household appliance to a prohibitive extent.

Within this frame, the present invention has the aim of providing a system for programming a household appliance having standardized operating programs, which allows for improving the control system of the appliance itself through the addition, in the time and under specific user's necessities, of durable programs which are designed

according to the user's specific requirements.

Said aim is obtained according to the present invention by a system and a method for programming a household appliance having the characterizing features of the annexed claims 1 and 24; said aim is also attained by a household appliance, for the use in the system according to claim 1, and by a programming user interface, for the use in the method according to claim 24, having the characterizing features of the annexed claims 17 and 31, respectively.

Further embodiments of the system, the method, the appliance and the user interface according to the present invention are then described in the attached dependents claims, which form an integral part of the present description.

Further aims, features and advantages of the present invention will become apparent from the following detailed description and annexed drawings, which are supplied by way of non limiting example, wherein:

- Fig. 1 shows schematically a system for programming a household appliance having an electronic control according to the present invention;
- Fig. 2 shows schematically a possible embodiment of the control system of a household appliance according to the present invention;
- Fig. 3 shows schematically a display device of a household appliance used in the system according to the present invention;
- Fig. 4 shows schematically an example of a video display of a managing program or editor, used in the system according to the present invention.

As mentioned above, the idea at the basis of the present invention is to provide a household appliance having conventional functions, i.e. equipped with common basic programs, which has, however, the peculiar feature of being already prearranged for receiving and retaining new operating programs, which come from outside and are designed according to specific user's requirements; according to the invention, the new operating cycles of the

CLAIMS

1. System for programming a household appliance (1) having an electronic control, of the type being able to execute a plurality of programs for the control of the realization of a group of treatment operations of the items onto which the action of the appliance (1) is directed, said appliance (1) having a control system comprising:

- a microcontroller (MP),
- memory means (ME1,ME2,M3) associated to said microcontroller (MP), wherein first information are stored before the manufacturing stage of the appliance has ended, said first information being used by the control system to execute a given number of first programs of the appliance (1), said first programs allowing the immediate use of the appliance (1) once the manufacturing of the same has been completed,
- means (IN) for interfacing said control system to external electronic programming devices (10),
- a control panel (2) residing on the appliance (1), for the selection and the control of the execution of said first programs,

characterized in that:

- a first part (ME1,ME2) of said memory means (ME1,ME2,M3) results in being write-protected after said first information have been stored therein during the manufacturing of the appliance,
- a second part (M3) of said memory means (ME1,ME2,M3) is provided for the storage of second information, once the appliance (1) has been marketed and/or or installed at a user's premises and by means of an external programming device (10), said second information allowing the control system to execute second programs which are additional and different with respect to said first programs,
- said control panel (2) residing on the appliance (1) allows for selecting and commanding the execution of said second programs in addition to said first programs,

where said second part (M3) of said memory means (ME1,ME2,M3) is of the writable and erasable type and said second information are encoded and stored therein for an undetermined time, until a possible subsequent modification or cancellation is carried out through said external programming device (10), at the user's desire.

2. System, according claim 1, characterized in that means are provided for preventing the storage within said second part (M3) of said memory means

(ME1,ME2,M3) of information which might lead to unsatisfactory results or performance of said appliance (1).

3. System, according to the claim 1, characterized in that said first information relate to the subdivision of said programs into various treatment phases, where each one of said phases is in turn characterized by determined values of control parameters of internal devices or actuators (A1-A5) of the appliance.

4. System, according to claim 3, characterized in that at least a part said first information relates to the values of said control parameters characterizing the various phases into which said first programs are subdivided.

5. System, according to claim 3, characterized in that at least a part said second information relates to the values of said control parameters characterizing the various phases into which said second programs are subdivided.

6. System, according to claim 3, characterized in that said first and/or second information comprise the duration of each of said phases, a temperature value being characteristic for said phase, the configuration and/or the mode of operation which the internal devices or actuators (A1-A5) of the appliance (1) must have during that phase.

7. System, according to claim 1, characterized in that said first and/or second information comprise data for identifying in an univocal way a determined program which can be executed by the appliance (1).

8. System, according to claim 7, characterized in that the data identifying a program comprise an order number.

9. System, according to claim 7, characterized in that the data identifying a program comprise a name in alphabetical and/or numerical and/or graphic characters.

10. System, according to claim 7, characterized in that the data identifying a program comprise numerical information and alphabetical or alphanumerical information.

11. System, according to claim 1, characterized in that said first part (ME1,ME2) of said memory means (M1,M2,M3) comprises at least a part of the program memory of said microcontroller (MP).

12. System, according to claim 1, characterized in that said first part (ME1,ME2) of said memory means (M1,M2,M3) comprise a memory of the ROM type.

13. System, according to claim 1, characterized in that said second part (M3) of said memory means (M1,M2,M3) comprise a memory of the EEPROM type.

14. System, according claim 1, characterized in that said external programming device is a Personal Computer (10).

15. System, according to claim 1, characterized in that means are provided for executing, under the direct control of said external programming device (10), one of said second programs.

16. System, according to claim 1, characterized in that means are provided for using the control system of said appliance (1) as an executor of controls coming from said external programming device (10), said appliance (1) behaving like a simple peripheral connected to said external programming device (10).

17. Household appliance, for the use in the system according to one or more of claims 1 to 16, having an electronic control system comprising:

- a microcontroller (MP),
- first memory means (ME1,ME2), associated to said microcontroller (MP), being write-protected for inhibiting the modification of said first information relating to said first programs,
- second memory means (ME3), associated to said microcontroller (MP), being writable and erasable for allowing the storage, and/or the modification thereof, of said second information relating to said second programs,
- interface means (IN) for connecting said control system (MP,ME1,ME2,ME3) to said external programming device (10).
- a control panel (2) residing on the appliance (1), for the selection and the control of the execution of either said first programs and said second programs.

18. Household appliance, according to claim 17, characterized in that it is a cooking oven (1).

19. Household appliance, according to claim 17, characterized in that it is a washing machine.

20. Household appliance, according to claim 17, characterized in that said interface means (IN) comprise a serial port.

21. Household appliance, according claim 17, characterized in that said interface means (IN) comprise an adapter for connecting said control system to a home bus, in particular a power line carrier bus.

22. Household appliance, according claim 17, characterized in that said control

panel (2) comprises a display device (6).

23. Household appliance, according to claim 22, characterized in that means (5) are provided for enabling the sequential displaying on said display device (6) of data identifying said programs.

24. Method for programming a household appliance (1) having an electronic control system (MP,M1,M2,M3), of the type being able to execute a plurality of programs, comprising the step of:

- storing first information into said control system (MP,M1,M2,M3), during the manufacturing stage of the appliance (1), said first information being used by the control system (MP,M1,M2,M3) to control the execution of a given number of first programs of the appliance (1), said first programs allowing the immediate use of the appliance (1) once the manufacturing of the same has been completed,
- providing the appliance (1) with control means (2) which allow for the selection and the command of the execution of said first programs,

characterized in that the following steps are further provided:

a) protecting said first information, for inhibiting their modification after they have been stored into said control system (MP,M1,M2,M3);

b) after the appliance (1) has been marketed or installed at a user's premises, interfacing said control system (MP,M1,M2,M3) to an external programming device (10),

c) obtaining, through said external programming device (10), second information for allowing said control system (MP,M1,M2,M3) to execute second programs being different with respect to said first programs,

d) storing said second information, by means of said external programming device (10), into said control system (MP,M1,M2,M3), for adding said second programs to said first programs,

e) selecting and commanding the execution of said second programs through said control means (2),

f) modifying or deleting said second information, through said external programming device (10), should the necessity arise for the user.

25. Method, according to claim 24, comprising, at least after step b) has been carried out, the step of reading out said first and/or second information from said control system (MP,ME1,ME2,M3), by means of said external programming device (10).

26. Method, according to claim 25, characterized by

- modifying, by means of said external programming device (10), the first information read out,
- storing the relevant modified information within said control system (MP,M1,M2,ME3), pairing said modified information with identifying data which are different from the ones being assigned to the first program of origin.

27. Method, according to claim 24, characterized by, at least after step b) has been carried out, establishing a connection between said external programming device (10), and a remote system, in particular an Internet site, through a communication line (RT).

28. Method, according to claim 27, characterized by downloading said second information from said remote system, for their subsequent storage within said control system (MP,M1,M2,ME3), through said external programming device (10).

29. Method, according to claim 27, characterized by sending said second information to said remote system, through said external programming device (10)

30. Method, according to claim 29, characterized by loading said second information contained in said control system (MP,M1,M2,ME3) into a memory of said external programming device (10), and sending them to said remote system.

31. A programming user interface, for the use in the method according to one or more of claims 24 to 30, said user interface being included in said external programming device (10) and comprising

- display means (II,III,IV),
- means for editing said second programs,
- means for realizing the likely storage of the second information relating to the edited programs within said control system (MP,M1,M2,ME3),

said means for editing said second programs being programmed for displaying onto said display means (II,III,IV) the subdivision of a program to be edited into various treatment phases and the values, for each of said phases, of control parameters of internal devices or actuators (A1-A5) of the appliance (1).

32. User interface, according to claim 31, characterized in that said means for editing are programmed for displaying said control parameters in a graphic form onto said display means (II,III,IV).

33. User interface, according to claim 31, characterized in that said means for

editing are programmed for entering and displaying onto said display means (II,III,IV) data identifying a selected program to be edited.

34. User interface, according to claim 31, characterized in that said means for editing comprises means for selecting a phase of interest among the phases into which a program to be edited is subdivided and/or displaying at least some of said control parameters relating to such a phase.

35. User interface, according to claim 31, characterized in that said means for editing comprises means for generating and representing a Cartesian plane onto said display means (II,III,IV), said Cartesian plane showing, on the abscissa, the duration of the various phases forming the program to be edited, and on the ordinates, another parameter relating to said phases, in particular a temperature value.

36. User interface, according to claim 31, characterized in that said means for editing comprises means for suppressing at least one of the phase into which the program to be edited is subdivided.

37. User interface, according to claim 31, characterized in that means are provided for displaying in a real time onto said display means (II,III,IV) information concerning the progress status of a program being running on said appliance (1).

38. User interface, according to claim 31, characterized in that said program to be edited is a cooking program for a oven and said control parameters comprises:

- the duration of a selected phase, and/or
- the temperature to be reached within the oven during the selected phase, and/or
- the configuration and/or operating mode of heat sources of the oven (1), and/or
- the type of ventilation of possible use during the selected phase, and/or
- the modes of a possible use of a grill heater during the selected phase.